

Claims

1. Device for selectively filtering liquid samples in compartments comprising inlet and outlet openings of a carrier body under reduced pressure and for vacuum drying drops of the sample liquid present in the area of the outlet openings of the compartments, comprising

- a chamber (24) comprising an interior space (46) limited by a top wall (40), a bottom wall (38) and lateral walls (42, 44) connecting them,
- the top wall (40) comprising an opening (48) with an opening edge (52) whereon a closing lid (84) or the carrier body (26) can selectively be placed in a substantially gastight manner by means of outlet openings (32) directed towards the interior space (46) of the chamber (24),
- one of the lateral walls being formed as an access lateral wall (44) which can be opened and closed substantially gastightly for introducing the carrier body (26) into the interior space (46) of the chamber (24), and
- the bottom wall (38) comprising a drain (76, 78) for liquid exiting from the outlet openings (32) of the compartments (28) of the carrier body (26), and

- a vacuum pump (82) with a suction conduit (81) terminating in the interior space (46) of the chamber (24) for producing a first low pressure for drawing liquid samples through the outlet openings (32) of the compartments (28) with the carrier body (26) being placed on the opening edge (50) of the top wall (40) and the access lateral wall (44) of the chamber (24) being closed and for producing a second low pressure higher than the first low pressure for drying drops of liquid samples still present on the outlet openings (32) of the compartments (28) with the carrier body (26) being located in the interior space (48) of the chamber (24) and the lid (84) being placed on the opening edge (50) of the top wall (40) as well as the access lateral wall (44) of the chamber (24) being closed.

2. Device according to claim 1, characterized in that a support mounting (52) is provided for receiving a carrier body (26) for locating it in the interior space (46) of the chamber (24).

3. Device according to claim 1 or 2, characterized in that the access lateral wall (44) comprises at least one cam element (62) extending parallelly to the bottom wall (38) of the chamber (24), which element is guided in a guiding device (64) in the two opposite directions (73) of the extension thereof and that a driving means (68) is provided comprising a driving element (70) moving the cam element (62) towards the chamber (24) to move the access lateral wall (44) into substantially gastight

abutment with the adjacent top, bottom and lateral walls (38, 40, 42) and moving the cam element (62) away from the chamber (24) to move the access lateral wall (44) from the chamber (24) to allow access to the interior space thereof.

4. Device according to claim 3, characterized in that the access lateral wall (44) or the adjacent top, bottom and lateral walls (38, 40, 42) of the chamber (24) comprises or comprise a seal (74).

5. Device according to claim 2 and 3 or 4, characterized in that the support mounting (56) is connected to the interior side of the access lateral wall (44) which is directed towards the interior space (46) of the chamber (24) and projects therefrom directing towards the interior space (46) of the chamber (24).

6. Device according to any one of claims 1 to 5, characterized in that at least one heating element (87) is provided for heating the interior space (46) of the chamber (24).

7. Device according to claim 6, characterized in that the heating element (87) is arranged on the interior side of at least one of the lateral walls (38, 40, 42, 44) which is directed towards the interior space (46) of the chamber (24).

8. Device according to any one of claims 1 to 7, characterized in that the opening edge (50) of the top wall (40) of the chamber (24) comprises a support surface (52) for the lid (84) and the carrier body (26), which surface is arranged in the plane of the opening (48) or parallel thereto, and a conical insertion surface (54) extending angularly to the support surface (52) for centering the lid (84) and the carrier body (26) when they are being placed on the support surface (52).

9. Device according to claim 8, characterized in that the support surface (52) comprises a seal.

10. Device according to any one of claims 1 to 9, characterized in that the suction conduit (81) connected to the vacuum pump (82) terminates in the drain (76, 78) of the bottom wall (38).

11. Device according to any one of claims 1 to 10, characterized in that the closure lid (84) comprises a plate to be placed tightly on the opening (48) of the top wall (40).

12. Device according to any one of claims 1 to 10, characterized in that the closure lid comprises a carrier body having compartments and a substantially gastight sealing body which can be placed onto the carrier

body for substantially gastightly sealing the inlet openings of the compartments thereof.

13.Device for pipetting samples, comprising:

- a movable gripping device (18) for gripping a carrier body (26) comprising multiple compartments for receiving liquid samples,
- a control means for controlling the gripping device (18), and
- a device according to any one of claims 1 to 12.

14.Use of the device according to any one of claims 1 to 12 for separating, isolating and/or purifying biopolymers from mixtures containing the biopolymers.

15.The method according to claim 19, wherein the biopolymers comprise peptides, proteins, nucleic acids, especially DNA and/or RNA, oligo- and/or polysaccharides.

16.The method according to claim 19, wherein the DNA is a genomic or a plasmid DNA.

17. Method for isolating a substance of interest, especially a biopolymer, from a sample comprising different substances and being located in a compartment having an inlet opening as well as an outlet opening and a porous matrix material arranged therebetween, to which the substances of the sample are immobilized by means of different affinities, comprising the following steps:

- feeding a wash buffer into the inlet opening of the compartment for releasing those substances from the matrix material the affinity of which to the matrix material is smaller than the affinity by means of which the substance of interest is bound to the material,
- drawing the wash buffer and the solved substances through the matrix material by means of low pressure and out of the outlet opening of the compartment, by using the device operated for filtering under reduced pressure according to claim 19,
- removing of residual material which might still be present on the outlet opening of the compartment,
- and feeding an elution buffer into the inlet opening of the compartment for releasing substantially merely the substance of interest from the matrix material,
- drawing the elution buffer and the substance of interest by means of low pressure through the matrix material and out of the outlet opening of the compartment, by using the device operated for filtering under reduced pressure, and

- during filtration, collecting the elution buffer and the substance of interest exiting from the outlet opening into a compartment inserted into the device.

18. The method according to claim 17, wherein the substance of interest is a nucleic acid, oligo- or polynucleotide.

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